

**1. General information****Course:** HEAT TRANSFER**Type:** CORE COURSE**Degree:** 344 - CHEMICAL ENGINEERING**Center:** 1 - FACULTY OF SCIENCE AND CHEMICAL TECHNOLOGY**Year:** 2**Main language:** Spanish**Use of additional languages:****Web site:****Code:** 57716**ECTS credits:** 6**Academic year:** 2021-22**Group(s):** 21 22**Duration:** C2**Second language:** English**English Friendly:** Y**Bilingual:** N**Lecturer:** IGNACIO GRACIA FERNANDEZ - Group(s): 21 22

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2. Pre-Requisites

Not established

3. Justification in the curriculum, relation to other subjects and to the profession

Not established

4. Degree competences achieved in this course**Course competences**

Code	Description
CB03	Be able to gather and process relevant information (usually within their subject area) to give opinions, including reflections on relevant social, scientific or ethical issues.
CB04	Transmit information, ideas, problems and solutions for both specialist and non-specialist audiences.
E03	Basic knowledge about the use and programming of computers, operating systems, databases and computer programs with application in engineering.
E07	Knowledge of applied thermodynamics and heat transmission. Basic principles and their application to solving engineering problems.
E31	Ability to manage information sources in chemical engineering. Properly handle the terminology of the profession in Spanish and English in the oral and written records
E32	Knowledge of the fundamentals and techniques of environmental analysis
G01	Capacity for the direction, of the activities object of the engineering projects described in the competence G1.
G02	Knowledge in basic and technological subjects, which enables them to learn new methods and theories, and give them versatility to adapt to new situations.
G03	Ability to solve problems with initiative, decision making, creativity, critical reasoning and to communicate and transmit knowledge, skills and abilities in the field of Chemical Engineering.
G04	Knowledge for the realization of measurements, calculations, valuations, appraisals, surveys, studies, reports, work plans and other analogous works.
G05	Ability to handle specifications, regulations and mandatory standards.
G06	Ability to analyze and assess the social and environmental impact of technical solutions.
G10	Knowledge, understanding and ability to apply the necessary legislation in the exercise of the profession of Industrial Technical Engineer
G12	Knowledge of Information and Communication Technologies (ICT).
G14	ethical commitment and professional ethics
G17	Synthesis capacity
G18	Capacity for teamwork
G19	Ability to analyze and solve problems
G20	Ability to learn and work autonomously
G21	Ability to apply theoretical knowledge to practice
G22	Creativity and initiative

5. Objectives or Learning Outcomes**Course learning outcomes**

Description

6. Units / Contents

Unit 1:
Unit 2:
Unit 3:
Unit 4:
Unit 5:
Unit 6:
Unit 7:
Unit 8:
Unit 9:
Unit 10:
Unit 11:

7. Activities, Units/Modules and Methodology							
Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description
Class Attendance (theory) [ON-SITE]	Lectures	CB04 E07 G01 G02 G03 G05 G06	1.2	30	N	-	
Workshops or seminars [ON-SITE]	Project/Problem Based Learning (PBL)	CB03 E07 E31 E32 G01 G02 G03 G04 G05 G06 G10 G12 G14 G17 G18 G19 G20 G21 G22	0.95	23.75	Y	N	
Group tutoring sessions [ON-SITE]	Project/Problem Based Learning (PBL)	E07 E31 E32 G01 G02 G03 G04 G05 G06 G10 G12 G14 G17 G18 G19 G20 G21 G22	0.1	2.5	Y	N	
Progress test [ON-SITE]	Assessment tests	E07 E31 E32 G01 G02 G03 G04 G05 G06 G10 G12 G14 G17 G18 G19 G20 G21 G22	0.15	3.75	Y	N	
Study and Exam Preparation [OFF-SITE]	Self-study	E07 E31 E32 G01 G02 G03 G04 G05 G06 G10 G12 G14 G17 G18 G19 G20 G21 G22	3.6	90	N	-	
Total:			6	150			
Total credits of in-class work: 2.4				Total class time hours: 60			
Total credits of out of class work: 3.6				Total hours of out of class work: 90			

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System			
Evaluation System	Continuous assessment	Non-continuous evaluation*	Description
Test	75.00%	100.00%	
Assessment of problem solving and/or case studies	25.00%	0.00%	
Total:	100.00%	100.00%	

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

9. Assignments, course calendar and important dates	
Not related to the syllabus/contents	
Hours	hours
Class Attendance (theory) [PRESENCIAL][Lectures]	30
Workshops or seminars [PRESENCIAL][Project/Problem Based Learning (PBL)]	20
Group tutoring sessions [PRESENCIAL][Project/Problem Based Learning (PBL)]	2.5
Progress test [PRESENCIAL][Assessment tests]	3.75
Study and Exam Preparation [AUTÓNOMA][Self-study]	90
Global activity	
Activities	hours
Study and Exam Preparation [AUTÓNOMA][Self-study]	90
Class Attendance (theory) [PRESENCIAL][Lectures]	30
Workshops or seminars [PRESENCIAL][Project/Problem Based Learning (PBL)]	20
Group tutoring sessions [PRESENCIAL][Project/Problem Based Learning (PBL)]	2.5
Progress test [PRESENCIAL][Assessment tests]	3.75
Total horas: 146.25	

10. Bibliography and Sources
Publishing

Author(s)	Title/Link	house	City	ISBN	Year	Description
Chapman, A.J. R.H. Perry, D.W. Green y J.O. Maloney	Fundamentals of heat transfer	McGraw-Hill	New York		1987	
Costa, E. y col	Ingeniería Química IV. Transmisión de calor	Ed. Alhambra	Madrid		1986	
Coulson, J.M. y col	Ingeniería Química. Tomos I y II	Reverté,	Barcelona		1988	
Levenspiel, O	Flujo de Fluidos e Intercambio de Calor	Reverte	Barcelona		1993	
Sparrow, E.M	Radiation Heat Transfer	McGraw-Hill	New York		1978	